



# **Miniprep Plus Operators Manual**

Release 7

We are delighted that you have chosen the Miniprep Plus instrument for your facility. We sincerely hope that you will find it useful in producing smears of consistent high quality.

For best technique, we recommend that you follow the simple directions described in this manual. Please read and familiarize yourself with the easy to follow steps described herein before using your instrument. For all technical questions or additional orders, please call Sedona Lab Products, LLC at the enclosed numbers:

Offices phone and fax: 1 (800) 851-9844 Internet: [www.sedonalab.com](http://www.sedonalab.com)

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# **1 Product Overview**

The Miniprep Plus Automated Blood Smearing Instrument is a mechanical device designed to emulate the standard method of preparing peripheral blood films by the wedge technique (Patent Pending). Also see Special Smears, Section 5.

Miniprep Plus has been designed both for stationary and portable use. As a stationary instrument it is valuable for preparation in Research Centers, Hospital Labs, Blood Banks, Satellite Facilities and Special Operations areas. Its portability makes it extremely valuable for the preparations of specimens on-site or in field facilities. Miniprep Plus has been designed with total functionality in mind for various conditions. Miniprep Plus does not require any external power source or battery. Miniprep Plus is suited for use in all environments, because it is mechanically operated with its lever-action, air dampeners, springs, and knob controls. It is immediately stabilized in all situations using its adjustable rubber feet. Use Miniprep Plus in the upright position only for proper smearing, with minimal errors.

Miniprep Plus replaceable spreaders and glass blades make clean up easy and fast. Reorder these parts as necessary, replacement parts last long and are priced reasonably to help with your lab budget. In addition, replacement parts can be stored for extremely long periods of time, in a minimal amount of space.

Evaluations using the best mechanical and electronic microscopy systems reveal Miniprep Plus more consistent than hand made smears using the “butter knife” method for diagnostic practice.

Miniprep Plus is a definitive teaching aid for all medical personnel and professional institutions. We recommend high quality Wright’s stains, such as our Hemastain ([www.sedonlab.com](http://www.sedonlab.com)) for optimal staining and viewing.

## **2 Installation and Operation**

### **a. Installation Instructions**

Miniprep Plus has been designed both for stationary and portable use. Miniprep instruments are shipped with one complete set of spreaders and glass blades, and one extra glass blade set. Unit is ready to use, right out of the box. When the Miniprep Plus is used as a portable instrument, it should be operated in a horizontal position or placed on a level surface. To level rubber feet, use a Phillips screwdriver to adjust foot tension until rocking is minimal. Please refer to section 3 and 7.

To Install Miniprep Plus:

1. Remove carefully from shipping carton; usually packed with foam inserts, save these.
2. Remove material covering spreaders on top of unit.
3. Carefully center spreader blades laterally, aligning / centering with target holes on platen front.
4. Test action of unit by making a “dry run” using two blank slides. Make any necessary adjustments.
5. Unit is now ready for use.

## **b. Principles of Operation**

During the patented cycle of Miniprep Plus, glass spreader blades are brought mechanically into contact with the drop of blood; the instrument pauses to allow the blood to wet the glass blades, distributing the blood evenly along the patented glass edge. Then the spreaders pull the blood gently along the slide at a predetermined angle and pre-selected speed. Speed control is achieved by use of a user controlled dampener which efficiently spreads the blood in the standard wedge configuration of thick to thin, providing a perfect working area for microscopy viewing. The smear/speed control knob is located at the top of the instrument for convenience.

## **c. Performance Characteristics**

Because Miniprep smearing action is user controlled, it is able to achieve reproducible smears with good working area. Our proven wedge technique allows blood cell distribution to be excellent and cell trauma minimal. In addition, it produces borders along the edges of the slide, which facilitates inspection of the working areas using standard microscopy apparatus.

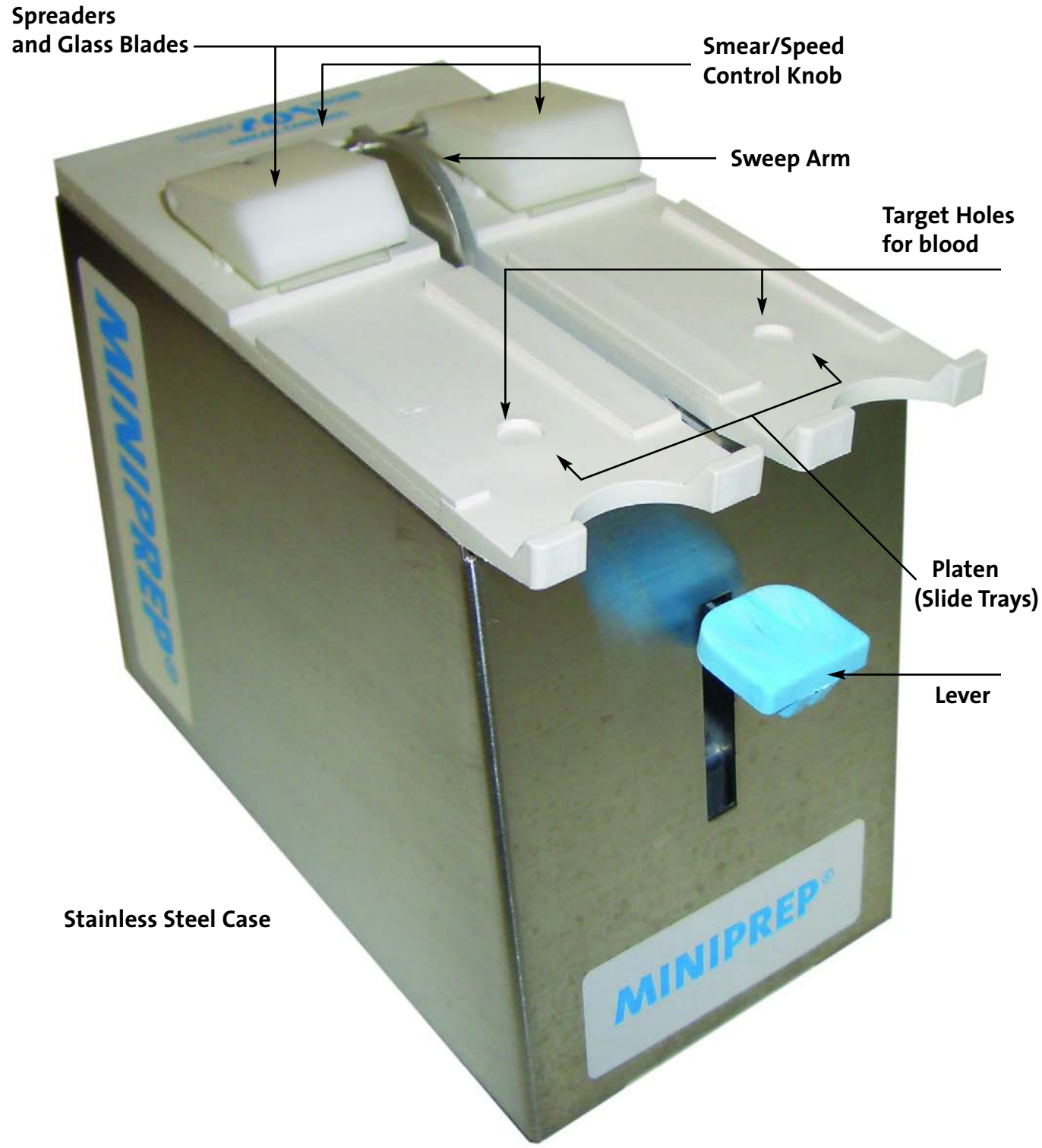
The length and thickness of the smear are related to the Hemocrit, the quantity of blood used, and the speed of the glass blades drawing the blood in the wedge configuration. A valuable characteristic of the Miniprep smear is its general consistency, due to the unit's ability to dispense smear after smear at a constant rate. Miniprep Plus assures reliable smear preparations regardless of the technician administering the slide preps 24 hours a day / seven days a week! This feature makes Miniprep the perfect teaching instrument for all skill levels and institutions for uniform smears regardless of the user or shift personnel.

## **d. Operating Instructions**

Please review the following diagram of the Miniprep Plus, with its features and part names. The slides should be placed in the slots provided, making sure they are properly seated. Either frosted end or clear slides may be used; if frosted sides are used, the frosted end must be placed at the front of the tray (by target holes). If a single smear is desired, a "dummy" or unused slide should be placed in the second tray of the platen.

You will obtain best performance by using quality slides, which have been pre-cleaned. Occasionally, slides may be cut either too long, too short, with ends that are not square, or with the frosted edge too large; these poorly made slides should be discarded.

# The Miniprep Plus

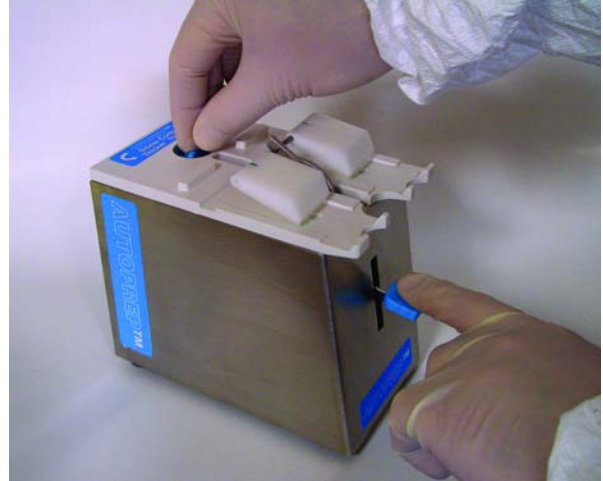


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## Calibrations

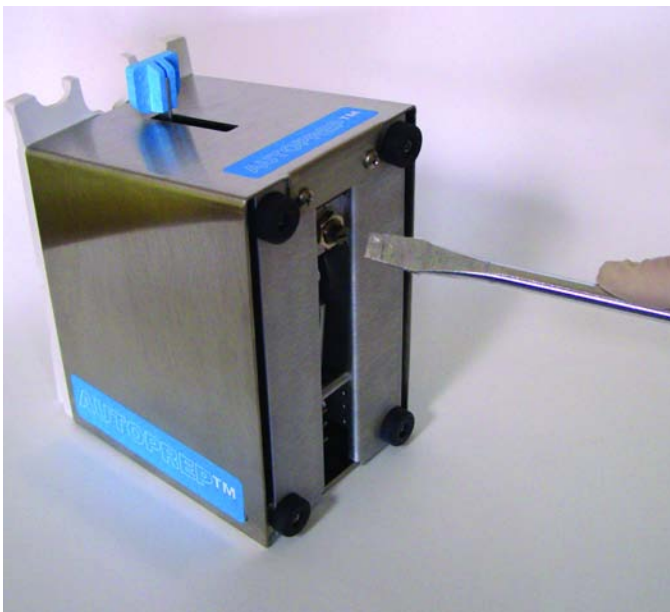
### a. Smear/Speed Control

This control is located at the top of the unit. To adjust it is necessary to move the sweep arm assembly slightly forward. The control knob adjusts the rate of air escapement from the dampener, which controls the speed at which the spreader glass retracts. By turning the knob clockwise, a slower rate of return produces smears that are generally thinner: counterclockwise adjustment produces faster speeds, which allow for thicker smears. The knob comes factory set at the median setting; the adjustment of the control knob should be a maximum of a full turn clockwise or counterclockwise from the median position.



Once the smear control knob is adjusted to produce the desired thickness of smear, it is generally not necessary to make further adjustments except for specimens having extremely high or low hematocrits. However, each user should independently assess their own needs for quality smear preparation and adjust accordingly.

### b. Pause Control



The pause control determines the amount of time that the glass blades stay in first contact with the blood drop. The pause control is located on the underside of the unit and is factory set. With normal use it should not need to be adjusted by the operator.

- a.** To check the duration of the pause control setting, completely depress the front lever and immediately release it. The spreader arm should release one second after the front lever is released. Measure only the amount of time that the lever remains fully depressed.
- b.** To increase the duration of the pause, rotate the screw clockwise. (using a standard screwdriver, in quarter turn increments)
- c.** To decrease the duration of the pause, rotate the screw counterclockwise.

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# Specimen Collection

The unit accepts both fresh and anticoagulant blood; e.g., EDTA. We recommend that the smears be made as soon as possible after collection. Typically, the EDTA will cause morphological damage after four hours. If capillaries are used, we recommend plain micro hematocrit tubes.

If a pair of sticks is used, it is somewhat more difficult to control the quantity of blood. The best technique is to touch only one of the sticks to the slide; this generally releases the desired amount of blood. If both sticks are touched at the same time, too much blood may be released.

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# Special Smears

### **Finger sticks**

We do not recommend that blood be applied directly from the finger to the slide because of the difficulty in controlling the amount of blood and placing it properly on the slide. Instead, we recommend using a plain 1.0mm. Capillary tube to transfer the blood. Make sure that the tube is filled at least halfway so that the blood will run out easily.

### **Reticulocyte Smears**

Leave the smear control at its usual setting and use a drop of blood approximately half the normal amount. The instrument will produce a slide with a monolayer over the major area. The spreaders will require cleaning after each specimen.

### **Erythematosus Preps**

Place a small quantity of the prepared Buffy-Coat material on the target. Set the smear control at the slowest setting (clockwise) and activate the Miniprep Plus.

## 6

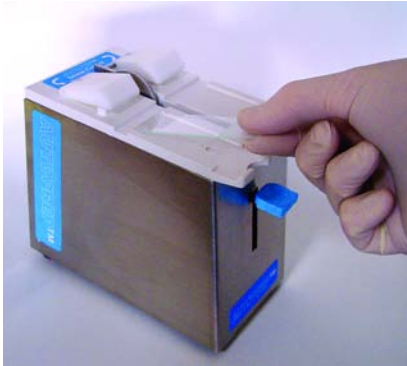
# Operational Hazards

As with any procedure involving fresh biological specimens, care should be taken to observe sanitary practices. We recommend following all lab safety procedures and wearing protecting clothing, eyewear and gloves as necessary. When handling slides, replacing spreaders or blades, handle all glass and blood products carefully.

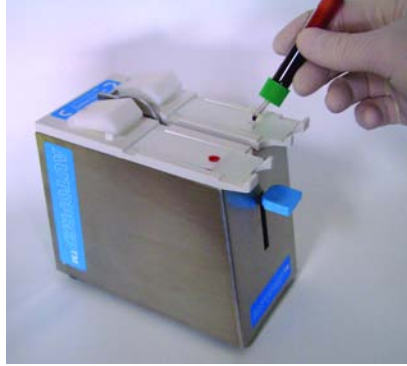
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## Procedures for Operation

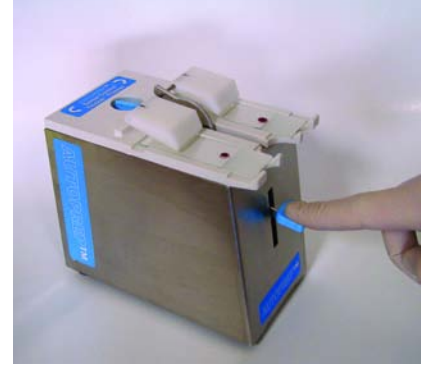
### a. Five Steps to perfect smears



**STEP 1-** Place slides on platen; both right and left side. Make sure there is always a slide in place in both trays, even if not being used for a smear.



**STEP 2-** Place blood drops on slides at target locations. Size of drop should be approximately pencil diameter (4 to 7mm).



**STEP 3-** Press down front lever with gentle force, only until the spreaders come in contact with the blood sample. Pause— don't jerk!



**STEP 4-** After the timed pause (approx. 2-3 seconds) to let the blood spread laterally and wet the glass blades, the spreaders then pull the blood gently along the slide. Remove slides, prepare for staining and review.



**STEP 5-** To clean spreaders rotate backward to rest position and wipe with tissue dampened with water. Make sure spreaders are dry before using.

#### Operational Precautions

- 1** When using frosted slides, make sure frosted portion is facing front, otherwise, spreaders will become nicked if they come into contact with frosting.
- 2** In case blood is inadvertently spilled into the mechanism, a swab should be used to clean the parts. A mild soap solution is recommended. However, immersion is not recommended.
- 3** We recommend that spreaders be cleaned after each use. This is necessary to prevent carry-over from slide to slide. How frequently the spreaders are cleaned is a choice for the individual laboratory. Only a small number of cells remain on the spreader; we have determined in field use, that approximately five to ten leukocytes have been carried over from one smear to the next, where they typically are mixed with approximately 20,000 leukocytes.

## b. Glass Blades and Spreader Replacement

The precision spreaders used in the Miniprep Plus instrument are manufactured of high-strength glass and are designed for long-term operation. Our experience indicates that in normal use they will last for several months depending on usage and care.

The spreader glass blades may get nicked from hitting chips of glass or other obstructions on the slide; a nick on the edge of the spreader may cause a streak in the smear. If this condition persists after cleaning, the glass blade should be replaced.

Replacing a glass blade is quite easy because it is held in place by double-sided tape.

### Glass Blades Replacement

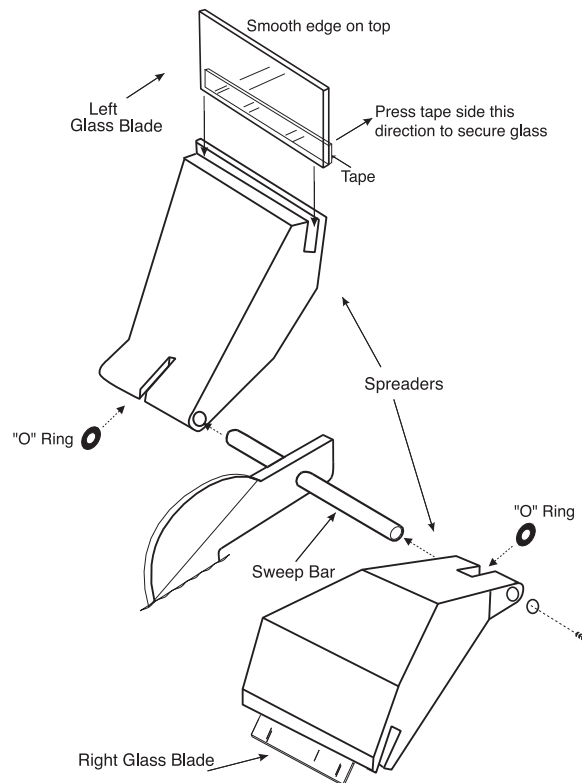
- 1** Flip spreader back over to cleaning position.
- 2** Remove old glass and clean glass area with alcohol using a swab.
- 3** Peel off double-sided tape cover paper from new glass blade.
- 4** Insert new glass blade into position on spreader, ensuring it is aligned properly. Glass should be straight and adhere to spreader surface.



### Spreader Replacement

Replacing a spreader set is quite easy because it simply slides into place with our patented slide-fit spreader assembly.

- 1** Remove old spreader by sliding it off sweep bar.
- 2** Slide new spreader and "O" ring onto sweep bar centered to target hole.



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# Service, Returns, Orders

## Service

The Miniprep Plus instrument is made of rugged materials and should provide trouble-free operation. It does not require periodic adjustments or lubrication. If you should have trouble, let us know immediately and we will offer suggestions and direct assistance. Our warranty covers all parts and labor for one year. The user may be required to return-ship the unit to a designated service depot, or distributor facility.

For technical assistance e-mail us at: [info@sedonalab.com](mailto:info@sedonalab.com)  
or call or fax us at 1 (800) 851-9844

## Returns

If it should be necessary to return the Miniprep Plus unit to us, we would prefer that you use the original packing material to prevent damage in transit. If the unit is shipped without the factory container, it must be well-padded on all four sides; failure to do this could cause damage during shipment, which could result in loss of warranty.

Shipping address: Sedona Lab Products  
2370 West Hwy. 89A, Suite 11-507  
Sedona, AZ 86336

## Sales Orders

For sales assistance e-mail us at: [info@sedonalab.com](mailto:info@sedonalab.com)  
or call or fax us at 1 (800) 851-9844  
Or Shop Online: [www.sedonalab.com](http://www.sedonalab.com)

## Supplies

Order directly from us (above) or from your distributor.  
Your Distributor may use different part numbers.

MINIPREP Glass Blades, with Dbl-sided taped 10 pieces only P/N. 21-696  
MINIPREP Spreaders (set of 2), P/N. 21-699  
MINIPREP "O" Rings (set of 12) P/N. 21-693  
MINIPREP Unit (each) P/N 21-697

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## Troubleshooting

### **Problem: Erratic Smears on rough edge. Streaks in smears. Appearance of a dip in the center of the feathered edge.**

#### **CAUSE**

- a. Blood trapped in the front of the glass blade.
- b. Dirty glass blades
- c. Nicked glass blades
- d. Bubbles in the blood drop
- e. Dirty slides
- f. Dried blood drop.

#### **SOLUTION**

Do not hold lever down too long. Release it as soon as it reaches its bottom position.  
Avoid depressing the lever too rapidly.  
Avoid jerking the lever when removing your finger from it.  
Avoid placing the blood drop off the target area  
The PAUSE CONTROL may require readjusting.  
See PAUSE CONTROL, see section 3b.

Clean the glass blades

Replace damaged glass blade

Avoid dispensing the blood drop in such a way that bubbles will be produced. If they are, attempt to “pop” them with the edge of pipette or a wooden stick

Do not use any slides that appear to be particularly dirty or greasy.

Depress the lever of Miniprep Plus immediately after the blood drop has been applied to the slide

### **Problem: Run off or excessively long smears**

#### **CAUSE**

- a. Blood drop too large
- b. SMEAR CONTROL knob set too thin or blood has a very low hematocrit

#### **SOLUTION**

Apply a smaller blood drop.

Turn the SMEAR CONTROL knob counterclockwise in “1/8 of a turn” increments until a satisfactory setting is obtained.

### **Problem: Excessively short smears.**

#### **CAUSE**

- a. Blood drop too small
- b. SMEAR CONTROL knob on a setting that is too thick or blood has a high hematocrit.

#### **SOLUTION**

Use a larger blood drop.

Turn the SMEAR CONTROL knob clockwise in “1/8 of a turn” increments until a satisfactory setting is obtained.

## **Problem: Smear is too short and/or feathered edge is bullet shaped.**

### **CAUSE**

- a. Blood drop is too small
- b. Blood is too thick.

### **SOLUTION**

Use a slightly larger blood drop.  
Use two drops of blood. Place a drop on either side of the target area.

## **Problem: Entire smear is in the shape of a bullet.**

### **CAUSE**

- a. Glass blades are not pausing in the blood drop long enough.
- b. Smear/speed control set too fast

### **SOLUTION**

The PAUSE CONTROL is set too short. Adjust the pause. See Calibration section 3b.  
Adjust smear/speed control, see section 3a.

## **Problem: Lopsided Smears.**

### **CAUSE**

- a. Blood drop not placed in center of area contacted by spreader blade.
- b. Glass blade not positioned squarely in its slot, or spreader out of position

### **SOLUTION**

Place blood drop on target area.  
Make sure that the glass blade is centered in its slot. Replace glass blade. Adjust spreader position.

## **Problem: Incomplete pickup of blood drop.**

### **CAUSE**

Spreader blade is not making contact with blood drop; drop being placed behind target area.

### **SOLUTION**

Be certain to place the drop directly on the target. If insufficient blood is still picked up, place the blood drop slightly forward of the target area (toward the spreader).

## **Problem: “Stand-up” blood drop (a drop which, when dispensed, doesn’t spread out and “wet” the slide).**

### **CAUSE**

- a. Dirty slide.
- b. Blood dispenser is being held at an angle that is too vertical.

### **SOLUTION**

Discard slide.  
Hold dispenser at about a 45- degree angle when the blood drop is dispensed. The amount of blood that is delivered can be controlled by the angle at which the dispenser is held.